



EXAMINER'S REPORT NOVEMBER 2019

SHIP OPERATIONS AND MANAGEMENT

General comments

It is very important to read the questions and answer them. This may seem obvious but candidates who read a paper for the first time and recognising some words on a subject they know about, seize on the words and write everything they know without actually giving the examiner what they have asked for. Some chose a question with four specific parts which asks for four specific answers and decide to combine their answers together making it difficult for the examiner to mark. The standard of drawing is improving with most candidates showing that they have gone into an exam properly prepared to use pencil, pen, ruler, eraser etc. It is OK to learn a route for a cargo or trade but the trade should be appropriate for the size of vessel. If you have learned a trade then it is equally important to know where the load and discharge ports you mention are and be able to put them on the map accurately.

Overall comments

The examiner's reports are published on the web site, read them and avoid repeating the common mistakes that occur again and again. Answers should be clearly laid out, well written and a pleasure to mark but there are still others that are not and a paper that is difficult to mark is unlikely to get many marks. Examiners expect candidates who are taking Institute exams to have a reasonable basic knowledge of maritime geography including the typical prevailing winds and major ocean currents.

Q1. Answer ALL parts of the question.

- a) Describe the characteristics (for example dimensions, tonnages, cargo gear, equipment) of ONE of the following types of vessels.
 - i. Capesize bulk carrier
 - ii. MR tanker.
 - iii. Modern Panamax container vessel.
- b) Draw a side profile and cross sectional of the vessel.
- c) Label the significant parts of the vessel.
- d) Give details of ONE trade the vessel operates in, where and how it will load, carry, and discharge its cargo.

Use the world map provided to support your answer.

Drawing: A popular question as always and some good drawings were produced with comprehensive

naming of the parts of the vessel although items such as the fo'castle and lifeboats were overlooked by some. When naming the parts of your chosen vessel, write the names on the drawing indicating the feature, do not waste time listing the parts and then numbering these and writing the number on your drawing.

There was evidence that candidates had studied actual ships drawings and attempted to reproduce these but other were let down by untidy work and copying sketches from manuals. The characteristics of vessels, i.e. their LOA, BEAM, Deadweight, Draught and Cubic capacity should be clear and unambiguous.

Stating a draught as being 12-20M or a Deadweight as 100-400 KMT is meaningless, look at the details of a real vessel and be prepared to state these so DWT 52 KMT on 12.5M draught or 185 KMT on 17 M. Some of the routes chosen for the MR tanker showed real knowledge, those for the Capesize should ensure that they know where Tubarao Port is located, it is not 45 kilometres up a narrow river in southern Brazil, or in Argentina, it is next to Vitoria, 500 Km north-east of Rio de Janeiro.

Q2. Answer ALL parts of the question.

a) Explain the difference between fixed costs, operating or daily running costs and voyage costs. How would you place the following costs in the above categories?

- i. Tug Charges
- ii. Supply of Paint for upcoming drydock
- iii. War Risk Insurance Premium
- iv. Additional War Risk Premium
- v. Crew joining costs
- vi. Annual Class survey of ISM system
- vii. Fuel Testing service fees
- viii. Registration Costs
- ix. Cost of LSFO for use in ECA .
- x. New Radar System for the vessel.

b) What additional cost items would also be included in the above categories?

Part (a) asked for you to explain the difference between the three main types of costs. This should be known by all candidates and should not be answered by providing examples, as these may be ambiguous. In very simple terms Fixed or acquisition costs occur when you buy a ship; if you don't do this you do not incur this cost. If you do this you will have this cost which is fixed and can be calculated as a daily rate even if you decide to keep it in your back yard doing nothing. If you decide to make it operational so that you can offer it out for cargoes and hire, then you will incur operating costs which are semi variable depending on a number of factors about the vessel but can be calculated and are generally provided as a daily cost of running or operating the vessel. If you do hire out your vessel on a voyage to carry a cargo then you will expect to be recompensed (by the hire or the freight) for both of the first two costs. The costs of doing the voyage will then be borne by the hirer even if this is you using your own owned and managed vessel.

The second section of part a gave a list of costs which needed to be correctly apportioned to the above categories and in most cases, this was well done but some of these could be in two categories and where this was explained then the mark was given. A new Radar system is increasing the value of the asset and should be looked on as a fixed cost.

Part b asked what additional cost items would also be included in the above categories and good marks were given for comprehensive answers.

Q3. One of your vessels has been fixed to carry out the following voyage. Using the factors below calculate:

- a) What cargo quantity can be loaded? Show your calculations to support your answer.
- b) Where would you bunker? How much you would order? And your reasons for this.
- c) What daily net profit would you earn for this voyage?

The vessel is currently completing discharge at Tampico (East Coast Mexico). Bunker ROB on completion 550 MT IFO 380 at US\$ 425 pmt, and 200 MT LS 0.1% Gasoil at US\$ 640 pmt. Intention is to place vessel on spot market on completion Osaka with same quantity of bunkers as on completion Tampico. Vessel must have 200 MT Fuel safety margin on board at all times. At load or discharge ports bunkering is concurrent with cargo operations. Currently expecting and allowing maximum of one day's delay for transit of Panama Canal.

SDWT 46,520 MT on 11.4 SW. Grain Cubic 59,755 m³, 5 HO/HA Constant including FW 650 MT Loaded speed / cons 13 KTS on 27 MT IFO 380/ LS Gasoil PD Ballast speed / cons 14 KTS on 27 MT IFO 380/ LS Gasoil PD Port consumption 4 MT IFO 380/ LS Gasoil PD Daily running cost USD \$ 8,900 / day

The Cargo: - 45,000 MT +/-10% MOLOO Bulk Soya Beans (SF 1.36). Lake Charles - Osaka. Max draft load and disport 11.6 M SW. Max draft Panama 11.7 SW 14,000 SSHEX load/ 11,000 SSHINC disc. Freight US\$28 PMT Commission 5%.

Distances: Tampico - US ECA = 450 NM US ECA - Lake Charles = 220 NM Lake Charles to US ECA = 220 NM USECA – Balboa Panama including Panama Canal transit= 1305 NM Balboa to Osaka = 7971 NM

Bunker Prices: Tampico - US\$430 PMT IFO 380 No LS Heavy Gasoil Lake Charles - US\$390 PMT IFO 380. US\$600 LS Heavy Gasoil 0.1% Balboa - US\$385 PMT IFO 380. US\$595 LS Heavy Gasoil 0.1% (6 hours delay taking bunkers), (US\$3,500 barge cost).

Port Costs: Load port US\$ 43,000 Discharge port US\$ 58,000 Panama Canal Transit Fee US\$ 81,000

Calculation: The voyage calculation was relatively simple with a cargo of Soya beans with SF 1.36 meaning that the vessel would cube out with over 2500 MT of spare deadweight, easily sufficient for the constant and fuel needed for the voyage and any reserves. Where the cargo is given as 45,000 MT +/- 10% MOLOO it means that the **owner** can load at their option between 40,500 MT & 49,500 MT because 10% of 45,000 MT is 4,500 MT. It does not apply to or modify the SF or stowage factor.

Where a Safety margin for fuels is given this is NOT additional to the fuels needed on board the vessel during its voyage it is part of them. The vessel started with a total of 750 MT in fuels and was expected to have the same quantity at Osaka on completion, so the safety margin was always on board. The only options for bunkering were as given and Osaka was not one of them. Even bunkering after the canal transit would still mean the margin was always in board. LS Gasoil had to be used during the two transits in the ECA and at the load port at which the loading rate was 14,000 MT per day SSHEX (Saturday Sunday and holidays excluded) so the factor for this was 1.4. The fuels used during the voyage had to be replenished with the same amounts.

While the fuels at Lake Charles were \$5 more expensive than at Balboa, the barge cost, and the delay of 6 hours at the DRC and the extra 1 MT of Fuel used at the latter added up to more than difference and Lake Charles was the better option.

Those who tried but made minor errors or showed knowledge of the right method were awarded marks but keep your calculation simple. Use a tried and tested layout and avoid pages of complicated calculations of the cost of fuels used on each leg of the voyage. Make your answer clear and easy to mark and you will benefit.

Q4. Answer ALL parts of the question. Your VLCC is due to complete discharge at Yokohama, Japan in late November 2019 and will sail via Malacca Strait to Mina al Ahmadi, Kuwait where it is fixed to load 20-22 December 2019. You will need to take bunkers during the ballast passage. The subsequent loaded passage is via the Cape of Good Hope to the US Gulf for discharge. Your vessel uses conventional fuels and does not yet have a scrubber system.

- a. **Explain the types of fuels you will need to have on board for this complete voyage to meet all the current SECA and ECA requirements, and the new regulations that will come into force during the loaded voyage.**
- b. **Using the world map provided, show the route your vessel will take indicating all the ports mentioned, including your chosen bunker ports and the main details of the voyage.**
- c. **Explain your reasons for your choice of the two bunker ports and why they have become major locations for bunkering.**

Bunkers: Candidates should be able to identify that three types of fuels, HSFO 3.5%S, LSFO 0.5%S & LSGO 0.1%S would be required and understand the SECA and ECA areas. The first fuel could be used for the whole ballast voyage to the load port, during loading and on the loaded passage up until 2359 31st December 2019 including any bunker calls on route but not in Chinese waters.

The second would need to be used for the loaded passage from 0001 1st January 2010 until the edge of the North American ECA, and the vessel would then need to use the third for all time within this ECA which extends to some 200 NM from the coast. Several candidates made an effort to show the voyage on the map with varying success. The load port is in the Arabian Gulf, not the Red Sea, and Malacca is not at the entrance to either of these. Port Hedland may be a bunker port but it is not on route or in South Africa.

Most candidates identified Singapore and Fujairah as possible bunkering places and gave a few reasons why they were successful but failed to develop their answers beyond that these ports had access to a refinery, were on a choke point with a lot of vessels nearby and had cheap calling costs. There are at least another six or seven reasons why these ports have been so successful.

Q5. Answer ALL parts of the question.

- a) **Explain the role of a classification society in shipping. What services do they offer?**
- b) **What surveys are required by Class during the life of a vessel? Under what other circumstances might Class inspect the vessel?**
- c) **Give details of five certificates issued by Class including their validity, verification requirements and what they certify.**

Class: Students should understand the role of Class and its position in the shipping world. Commercial vessels MUST be classed in order to trade as without a Class they will generally be unacceptable anywhere. Class set standards to which a vessel must adhere to remain acceptable to Class and these will be designed to comply with the laws and statutes of the Maritime authorities. They provide an independent check on the vessels condition. They do not guarantee seaworthiness, they are not employed but Flag but they do act as agents for them in issuing various certificates on behalf of the Flag authorities, who use them because generally Class has greater expertise in

technical matters. The certificate of Class is issued by Class itself, under its own authority.

Most candidates showed some knowledge of the role of Class at the building stage. Some were aware of the survey cycle but others did not demonstrate knowledge of their frequency or validity. This should be fully understood. Most candidates showed familiarity with some of the Certificates they issue.

Q6. Answer ALL parts of the question.

Your handymax vessel is due to load a cargo of grain from South America in January for discharge Northern Europe. Your last cargo was mixed timber and wood products. To ensure the safety of your vessel and the proper carriage of the cargo;

- a) What information must you find out about the vessel and what preparations would you take before loading?**
- b) What precautions would you take during and at completion of loading?**
- c) What actions would you take during the loaded voyage?**
- d) What weather and climate conditions would you expect to encounter during the voyage. Use the world map provided to support your answer.**

Grain Loading: Students needed to show good knowledge of the precautions to be taken when loading grain and in general terms a vessel will need to know the SF of the cargo, the quantity it can load and the subsequent loaded draft. This will then need to be compatible with the cp terms and the depths at the ports. The vessel must be grain clean and familiar with the precautions to be taken during loading and carriage and the agents at the port. In every type of fixture, the details of the laydays, etas and charter party requirements must be made known to correct parties together with availability of berths, bunkers and the cargo.

During and after loading the grain will need to be kept dry and properly trimmed to prevent any chance of shifting. Fumigation may be needed before or after loading. On the voyage, checks should be carried out regularly for any heating of the cargo or sign of water ingress and suitable ventilation should be carried out.

Vessels do not routinely load grain cargoes on the West Coast of South America, most if not all are loaded on the East coast from Brazil and Argentina. The weather from here to Northern Europe will generally be mild for most of the voyage but will deteriorate towards the end as the vessel goes over the Tropic of Cancer and approaches European waters. There will be a significant fall in the temperature of the sea and air so ventilation will need to be controlled and rough weather mainly from the west will be experienced but there will not be hurricanes.

Q7. Your vessel is moored alongside a berth and is close to completing discharge of a cargo of steel coils. A vessel approaching a berth to moor ahead of you with pilot on board and tugs in attendance loses control and makes contact with your vessel, penetrating a side ballast tank and causing other structural damage in No3 hold. A crewman and two stevedores suffer injuries while working in the hold.

- a) What immediate action should the crew take on board your vessel?**
- b) What should the management company do to assist the vessel and the crew?**
- c) What assistance is available at the port and in the local area?**
- d) What insurances does the vessel have to cover this incident?**

Incident: Students were required to identify the insurances the vessel should have and the parties that need to be informed of the incident. But far too many candidates seem to have been obsessed with the injured crewman and stevedores in the cargo hold. Some indeed thought that the only action that should be undertaken was to treat the injured and get them to hospital. While important, the Master's first consideration should be the safety of the vessel as this is vital for all on board. He should be directing the crew to make sure the vessel is safe, still moored to the dock, taking water yes but not sinking or in danger of capsizing which would jeopardise everyone. While this assessment of the situation on the vessel is carried out, others should check the injured; determine the extent of these and what is needed.

When the situation is fully understood and under control then contact your owner/manager and alert the DPA or emergency team. The resources available in your management office should be fully utilised to deal with communicating to interested parties and providing help to the vessel. Local help is also available for your agents together with the port authorities who should be informed promptly as they bear much of the responsibility for the incident, it was their berth, pilots and tugs, which means that a full record should be kept of times and actions at the berth and on the vessel, by the vessel, for your insurers, the P&I club and H&M insurers.

Q8. The International Maritime Solid Bulk Cargoes Code (IMSBC) came into force in 2011. Your vessel has been fixed to load a solid bulk cargo of mineral concentrate which is listed as Group A under the code.

- a) **What is a mineral concentrate and what specific hazard does a listing under this group signify?**
- b) **What general information must be given to the vessel to enable the crew to prepare for this cargo?**
- c) **What specific documentary information must be given by the suppliers/shippers to the vessel prior to loading?**
- d) **What must the vessel agree before loading with the terminal, and what must be checked during the load to ensure that the requirements of the IMSBC code are met.**

IMSBC: The IMSBC code came into force in January 2017, three years ago. It should therefore be anticipated that a question on this might arise but few candidates chose this. Those that did generally showed some good knowledge of the code. Mineral concentrates are refined ores where much of the waste material has been removed.

As a Group A cargo they are known to be prone to liquefaction if shipped with moisture content above the TML and specific guidelines are provided to meet this situation. Several candidates showed real knowledge of these but there was less certainty about the practical issues that would arise during the loading but overall quite well done.